

CLAIMS

1. A two-sides in-mold decoration molding die, comprising:

a first mold (1) including a first cavity (28), on which a first decoration film (100) is to be movably disposed in a first direction and parallel to a first cavity forming face (21) where the first cavity (28) is provided, so as to pass over the first cavity (28);

a second mold (2) including a second cavity (58), on which a second decoration film (110) is to be movably disposed in a second direction intersecting the first direction and parallel to a second cavity forming face (51) where the second cavity (58) is provided, so as to pass over the second cavity (58), the second mold (2) being provided with a protruding section (52a) including a runner (55, 56) at a position corresponding to a non-passing region (9b) of the second decoration film (110) of the second cavity forming face (51), and being placed so as to oppose the first mold, and being relatively movable with respect to the first mold so as to be clamped thereto and separated therefrom;

wherein upon clamping the first and the second molds (1, 2), an upper surface of the protruding section (52a) and the first decoration film (100) come close to

each other, so as to define in the runner (55, 56) a molten resin path (56a) that guides the molten resin to pass between the first and the second decoration films (100, 110), thereby preventing the molten resin from leaking; and

the molten resin is injected into the first and the second cavities (28, 58) to produce a molded product to which the first and the second decoration films (100, 110) are integrally adhered.

2. The two-sides in-mold decoration molding die according to claim 1, wherein a height (D1) of the protruding section (52a) located in the non-passing region (9b) of the second decoration film of the second cavity (2) is substantially the same as a thickness (D2) of the second decoration film (110).

3. The two-sides in-mold decoration molding die according to claim 1 or 2, wherein the protruding section (52a) is defined by an insertion hole (51a) formed in the non-passing region (9b) of the second decoration film, and a protrusion forming block (52) to be inserted in the insertion hole (51a); and

the protrusion forming block (52) provided with the runner (55, 56) on an upper surface thereof is inserted in the insertion hole (51a) with an uppermost portion thereof protruding outside to constitute the protruding section (52a).

4. The two-sides in-mold decoration molding die according to claim 1, wherein the first and the second molds (1, 2) are respectively provided with inserts (20, 50) oriented such that opposing faces of the inserts constitute the cavity forming faces (21, 51) when the molds are clamped, and a die sets (3, 4) for holding the inserts so as to insert the inserts (20, 50) therein, in which faces of the die sets (3, 4) on the respective molds confronting each other serve as clamping force supporting portions (10a, 10b).

5. The two-sides in-mold decoration molding die according to claim 4, wherein the first and the second molds (1, 2) are formed such that the first and the second cavity forming faces (21, 51) of the inserts (20, 50) are recessed with respect to the clamping force supporting portions (10a, 10b) of the die sets (3, 4).

6. A method of manufacturing a two-sides in-mold decoration molded product utilizing a molding die including a first mold and a second mold (1, 2) respectively having a first cavity forming face (21) and a second cavity forming face (51), the first cavity forming face and the second cavity forming face being provided with a first cavity (28) and a second cavity (58) respectively, comprising:

disposing a first decoration film (100) on the first mold (1) so as to move in a first direction and

parallel to the first cavity forming face (21) where the first cavity (28) is provided, while passing over the first cavity (28);

disposing a second decoration film (110) on the second mold (2) so as to move in a second direction intersecting the first direction and parallel to the second cavity forming face (51) where the second cavity (58) is provided, while passing over the second cavity (58), the second mold (2) including a runner (55, 56, 57) on the second cavity forming face (51) through which to supply the molten resin to the cavity, and a protruding section (52a) formed thereon so as to surround the runner (55, 56) located in a region to be directly opposed to the first decoration film (100) upon clamping the second cavity forming face (51), with not to overlap the protruding section (52a) of the second mold (2);

clamping the first mold (1) and the second mold (2) with the two decoration films held therebetween;

causing an upper surface of the protruding section (52a) and the first decoration film (100) to contact with each other in a region where only the first decoration film (100) is disposed as a consequence of the clamping; and

injecting the molten resin via the runner (55, 56, 57) into the first and the second cavities (28, 58) so

as to form a resin molded product and to integrally adhere the first and the second decoration films (100, 110) to a surface of the resin molded product, while keeping the upper surface of the protruding section (52a) and the first decoration film (100) in mutual contact thereby preventing the molten resin from leaking through between the second cavity forming face (51) and the first decoration film (100).

7. The method according to claim 6, further comprising:

 setting a height (D1) of the protruding section (52a) to be substantially the same as a thickness (D2) of the second decoration film (110), causing the protruding section (52a) to contact with the first decoration film (100) upon clamping the molds, so that the second cavity forming face (51) and the first decoration film (100) make close contact with each other.